

REMARKS

Claims 1-22 and 24-41 are pending in this application, of which claims 31-33 are withdrawn from examination. Claim 23 has been cancelled without prejudice or disclaimer. Claims 7, 16, 20, 21, 24, 26, 30 and 36-41 have been amended without any intention of narrowing the scope of the claims. Claims 1-8 and 11-20 are allowed. Reconsideration of this application is respectfully requested in view of the foregoing amendments and the following remarks.

Claim Rejection - 35 U.S.C. §101

Claims 36-41 are rejected under 35 U.S.C. §101 because the claimed invention is allegedly directed to non-statutory subject matter. Specifically, the Office Action states that claims 36-41 are directed to non-statutory subject matter pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106), wherein the claims must have either a physical transformation and/or a useful, concrete and tangible result. Applicants respectfully traverse.

Merely in order to expedite prosecution and without acceding to the rejection, claims 36-41 have been amended to recite “aligning the substrate according to the determined alignment information.” Accordingly, Applicant requests withdrawal of the rejection of claims 36-41 under 35 U.S.C. §101.

Claim Rejection - 35 U.S.C. §102(b)

Claims 9-10 and 34 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,420,791 to Huang. Without acceding that Huang is proper prior art under 35 U.S.C. §102(b), Applicant traverses this rejection for at least the following reasons.

Applicant respectfully submits that the cited portions of Huang fail to disclose, teach or suggest a marker structure on a substrate for optical alignment of the substrate comprising, *inter alia*, the second structural element is substantially non-reflecting, a separation between the first and second reflecting surfaces determines a phase depth condition for the detected light, and the second reflecting surface comprises a plurality of additional structural elements located above an opaque layer as recited in claim 9.

Huang teaches an alignment mark design including a metal plateau and a metal material formed over a provided substrate. Referring to Figure 3B, which the Office Action relies upon, the substrate 300 includes a zero mark 302 for alignment during photolithography processes and a dielectric layer 304 formed over the substrate 300, which is patterned to form a wiring line 308. Additionally, another dielectric layer 310 is formed on top of the previous dielectric layer 304 wherein metal plateaus 312b are formed therein. Additional dielectric layer 316 is formed on top of the substrate 300 and includes metal filled trenches 318. Dielectric layer 316 with the embedded metal filled trenches 318 acts a diffraction grating. Huang, column 3, line 60 – column 4, line 25.

The Office Action states that Huang discloses a plurality of first structural elements (items 318 and 312 of Huang) and a plurality of second structural elements (items 308 and 302). As discussed above, item 308 is described as a wiring line and item 302 is described as a zero mark. These two features 302, 308 which the Office Action states are analogous to the claimed second structural element are not substantially non-reflecting as is recited in claim 9. In fact, items 302, 308 cannot be substantially non-reflecting for the substrate and mark configuration described in Huang to function properly. As described in Huang at column 1, lines 31-45, the zero mark (302) is used with a laser beam for the purpose of substrate alignment. Therefore, it cannot be non-reflecting for the alignment procedure to work. Moreover, the wiring line 308 is an opaque metal material, which can cover the zero mark 302 and because of that blocking requires in Huang the use of the metal plateaus 312b, additional dielectric layer 316 and metal filled trenches 318. Huang, column 1, lines 46-48. Therefore, the wiring line 308 and zero mark 302 cannot be analogous to the claimed plurality of second structural elements.

Furthermore, the cited portions of Huang do not disclose, teach or suggest the claimed “a separation between the first and second reflecting surfaces determines a phase depth condition for the detected light.” Pages 2-3 of the Office Action do not specifically address this feature, but merely state that Huang discloses such. Applicant submits there is no clear and explicit disclosure in the cited portions of Huang of having the separation between the first and second reflecting surfaces determine a phase depth condition for the detected light. Accordingly, the Office Action has failed to state a proper case of anticipation to which the Applicant can respond. If this rejection is asserted again, Applicant respectfully requests that the Examiner particularly point out such a disclosure within Huang to support the rejection.

Finally, the cited portions of Huang do not disclose, teach or suggest the claimed “the second reflecting surface comprises a plurality of additional structural elements located above an opaque layer.” Again, pages 2-3 of the Office Action do not specifically address this aspect, but merely state that Huang discloses such a feature above the opaque layer 300 of Huang. Accordingly, the Office Action has failed to state a proper case of anticipation to which Applicant can respond. If this rejection is asserted again, Applicant respectfully requests the Examiner to particularly point out such a disclosure within Huang to support the rejection.

For at least these reasons, the rejection of claim 9 should be withdrawn.

Claims 10 and 34 either recite similar aspects or depend from claim 9 and are allowable for similar reasons as discussed above with respect to claim 9, and for the additional features recited therein.

Claim Rejection - 35 U.S.C. § 102(e)

Claims 21-30, 35 and 41 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,985,618 to Adel. Applicant traverses the rejection for at least the following reasons

Applicant respectfully submits that the cited portions of Adel do not disclose, teach or suggest a marker structure on a substrate for optical alignment of the substrate, the marker structure comprising, *inter alia*, a plurality of primary lines comprising a first material and a plurality of first interposed lines comprising a second different material, as recited in claim 21.

Adel teaches an overlay mark design used to determine relative position between two or more successive layers of a substrate or between two or more separately generated patterns on a single layer of a substrate. Adel, Abstract. With regard to Figures 9, 11, and 12 of Adel, which the Office Action relies upon for the rejection of claim 21, the overlay mark is configured to measure overlay in two separate directions and includes a plurality of coarsely segmented elements, which are in turn, formed by a plurality of finely segmented elements. Adel, column 23, lines 1-20.

However, the cited portions of Adel fail to disclose, teach or suggest a marker structure wherein the primary lines comprise a first material and the first interposed lines comprise a second different material, as recited in claim 21. Therefore, for at least these reasons, the rejection of claim 21 should be withdrawn.

Claim 23 has been cancelled so its rejection is moot. Claims 22, 24-30, 35 and 41 either recite similar aspects or depend from claim 21 and are allowable for similar reasons as discussed above with respect to claim 21, and for the additional features recited therein.

Allowable Subject Matter

Claims 1-8 and 11-20 are allowed.

In view of the foregoing all of the claims in this case are believed to be in condition for allowance. Should the Examiner have any questions or determine that any further action is desirable to place this application in even better condition for issue, the Examiner is encouraged to telephone applicants' undersigned representative at the number listed below.

Respectfully submitted,


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